

UNCLASSIFIED

# NATIONAL IMAGERY AND MAPPING AGENCY



## UPDATE OF NIMA TR 8350.2

UNCLASSIFIED



# UPDATE OF NIMA TR 8350.2

---

## Technical Report 8350.2

- **MIL-STD-2401, Department of Defense World Geodetic System (WGS) Identifies TR8350.2 Department of Defense World Geodetic System 1984, Its Definition and Relationships with Local Geodetic Systems as the Defining Document for DoD Geoid and Datum Transformations etc.**
- **Update of TR8350.2 Required to Implement Refined Geoid (EGM 96)**
- **Additional Changes Incorporated to Include Activities Since Last Version of Document, August 93**



# UPDATE OF NIMA TR 8350.2

---

## Update Status

- **Approved for Public Release**
- **Initial Print Scheduled for 20 Feb 98**
  - Distribution Through DLA
  - Civilian Purchase through USGS
- **Internet Version, NIMA Home Page, 20 Feb 98**



# **UPDATE OF NIMA TR 8350.2**

## **WGS 84 EARTH GRAVITY MODEL 1996 (EGM 96)**

---

### **Background**

- **Refined WGS 84 Earth Gravity Model**
  - NASA/DMA Memorandum of Understanding , April 1994
  - Cooperative Effort with NASA Goddard Space Flight Center (GSFC) April 94 - Present
  - Geoid Accuracy Improved from 2 - 6 m to .5 - 1.0 m
  - Final Model Complete, Nov 96
    - <http://cddis.gsfc.nasa.gov/926/egm96/egm96.html>
    - <http://osis.nima.mil>
  - Joint NASA/NIMA Project Report in Work, Mar 98
- **Original WGS 84 Ellipsoid held fixed to minimize impacts**



# UPDATE OF NIMA TR 8350.2

---

## Major Changes in TR8350.2

- **Refined Earth Gravity Model (EGM)**
  - Spherical Harmonic Coefficients Complete to Degree and Order 360
  - World-wide Grid of Geoid Heights at a 15 Minute Resolution
- **Additional and Improved Datum Transformations from Local to WGS 84 (approx. 12)**
- **Modifications to the Ellipsoidal Gravity Model**
- **New Earth Gravitational Constant (GM)**
  - Effects GPS and High Precision Satellite Orbit Determination Work
  - In Use in DoD Since 1994



# UPDATE OF NIMA TR 8350.2

---

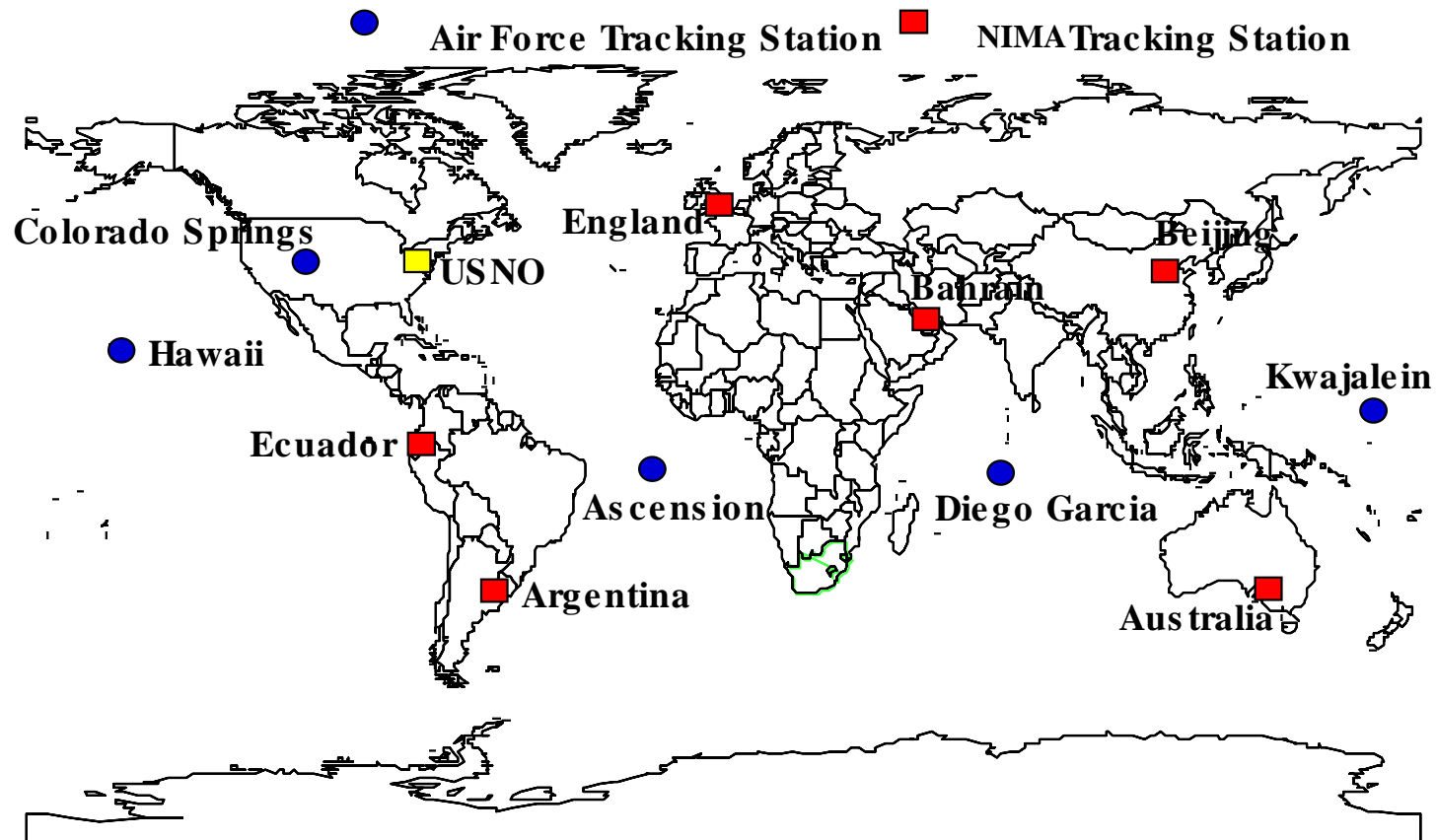
## Major Changes cont.

- **New Realization of the WGS 84 (G873) Reference Frame**
  - Compatible with International Standards (ITRF) to 10 cm level
- **Inclusion of a New Chapter on Implementation Guidance**
  - Minimize Impacts
  - Implement Based on System/Product Accuracy Requirements



# UPDATE OF NIMA TR 8350.2

## GPS TRACKING STATIONS





# UPDATE OF NIMA TR 8350.2

---

## Recommendations

- **Do Not Apply Changes to Systems that are Being Replaced**
- **All New System Developments Should be Compliant**
- **Systems that are Updated Should Take Appropriate Steps to Ensure Ease in Future Updates**
- **Utilize a Smart Implementation on a System by System Basis to Minimize Implementation Costs (Cost vs. Benefit)**
- **Only Apply Geoid Changes to Systems that will Benefit from the Accuracy Improvements**